*Rec. zool. Surv. India:* Vol. 122(3)/283–286, 2022
DOI: 10.26515/rzsi/v122/i3/2022/167231

ISSN (Online) : 2581-8686
ISSN (Print) : 0375-1511

# First record of flower cardinalfish *Ostorhinchus fleurieu* Lacepède, 1802 (Kurtiformes: Apogonidae) from Northern part of the East coast of India

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## Abstract

The current study reports the first-time record of flower cardinalfish *Ostorhinchus fleurieu* Lacepède, 1802 (Kurtiformes: Apogonidae) from the northern part of the east coast of India. One specimen was collected from Petuaghat fish landing centre, West Bengal, while routine sampling for trash fishes collection. The details of morphometric measurements, meristic counts, and distribution are discussed in this paper.

**Keywords**: Bycatch, Coral reef, Diversity, New records, Petuaghat Landing Centre

## Introduction

Cardinal fishes belong to the family Apogonidae Günther, 1859, rich in reef-dwelling small-sized fishes mainly occurring in tropical and temperate seas (Gon *et al*., 2020). Generally, cardinal fishes are small in size but, few species, such as *Cheilodipterus intermedius* Gon, 1993, *C. macrodon* (Lacepède, 1802), *Amioides polyacanthus* (Vaillant, 1877), and *Holapogon maximus* (Boulenger, 1888) have a large size of more than 20 cm (Saravanan *et al*., 2014). The family Apogonidae is characterized by body ovate to elongate. Eyes are large, and their diameter exceeds snout length. Jaw small with small villiform teeth, teeth present on vomer, but palatine teeth may be absent. Preopercle with double edge, variously serrated or smooth (Ray *et al*., 2018). This family comprises 366 species worldwide, belonging to 39 genera and four subfamilies usually found in marine, fresh, and brackish water habitats (Ray *et al*., 2018; Mohanty *et al*., 2020). Most of these species are from the Indo-Pacific region. Out of the four subfamilies, the Apogoninae is the largest number of species (340) followed by Pseudamiinae (22), Amiodinae (3), and Paxtoninae with one species respectively (Mabuchi *et al.,* 2014). It is characterized by the absence of canines (except in the genus *Cheilodipterus*) ctenoids scale on the body and lateral line complete (except in the genus *Foa* and *Fowleria*) (Smith and Heemstra, 1986).

In the Indian mainland (except the Andaman & Lakshadweep Islands) waters, 14 species of the genus *Ostorhinchus* are reported. These are *O. apogonoides* (Bleeker, 1856), *O. aureus* (Lacepède, 1802), *O. cookie* Macleay, 1881, *O. cyanosoma* (Bleeker, 1853), *O. endekataenia* Bleeker, 1852, *O. fasciatus* (White, 1790), *O. fleurieu* Lacepède, 1802, *O. holotaenia* (Regan, 1905), *O. nigricans* (Day, 1875), *O. nigrofasciatus* Lachner, 1953, *O. novenfasciatus* Cuvier, 1828, *O. oxina* (Fraser, 1999), *O. septemstriatus* (Günther, 1880) and *O. taeniophorus* (Regan, 1908) (Mohapatra *et al.,* 2020). From the West Bengal coast, only two species of the family Apogonidae were reported yet i.e., *Fibramia lateralis* (Valenciennes, 1832) and *Jaydia striata* (Smith and Radcliffe, 1912) (Yennawar *et al.,* 2017; Ray *et al.,* 2018) and nine species have been reported from the Odisha coast *i.e.*, *Apogonichthyoides pseudotaeniatus* (Gon, 1986), *A. taeniatus* (Cuvier, 1828), *Fowleria aurita* (Valenciennes, 1831), *Jaydia poeciloptera* (Cuier 1828), *J. truncata* (Bleeker 1855), *Ostorhinchus aureus* (Lacepède, 1802), *O. endekatania* (Bleeker, 1852), *O. fasciatus* (White, 1790), *Taeniamia macroptera* (Cuvier, 1828) and *Jaydia novaeguineae* (Valenciennes, 1832) (Mohapatra *et al.,* 2020; Mohanty *et al.,* 2020). The specimen collected from the Petuaghat fish landing centre of the West Bengal coast was examined and identified as *Ostorhinchus fleurieu*

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Article Received on: 04.02.2022 Accepted on: 01.12.2022

Lacepède, 1802. The present paper deals with the new record of *O. fleurieu* from the northern part of the east coast of India.

## Materials and Methods

During the routine survey for bycatch fauna landing, a single adult specimen of *Ostorhinchus fleurieu* Lacepède, 1802 was collected on 15th October 2021 from the Petuaghat fish landing centre (21°47'48.37"N & 087°52'47.92"E), West Bengal. The specimen was collected from the trawl bycatch, and therefore, did not know the exact location of the collected fish habitat. The collected specimen was photographed to record the natural colour before preservation in 90% ethanol for further use. The specimen was brought to the laboratory to measure morphometric and meristic characters following Gon and Randall (2003) with a digital calliper nearest 0.1 mm, counted the scales and fin rays with the help of a stereo zoom microscope Leica S9i. The examined material was deposited in the National Zoological Collection (NZC), Zoological Survey of India, Marine Aquarium and Regional Centre, Digha, with registration number MARC/ZSI/F8568.

## Results

The details of morphometric characters and meristic counts of *Ostorhinchus fleurieu* Lacepède, 1802 were presented in Table 1, and species descriptions were given below.

**Table 1.** Morphometric characters and Meristic counts of *Ostorhinchus fleurieu* Lacepède, 1802 collected from Petuaghat fish landing centre, West Bengal

| S. No. | Morphometric characters | Measurements (mm) |
|---|---|---|
| 1. | Standard length | 80.70 |
| 2. | Total length | 106.32 |
| 3. | Forked length | 97.24 |
| 4. | Head length | 31.58 |
| 5. | Body depth | 30.37 |
| 6. | Pre dorsal length | 36.25 |
| 7. | Dorsal fin length | 10.88 |
| 8. | Pre pectoral length | 33.60 |
| 9. | Pectoral fin length | 23.12 |
| 10. | Pre pelvic length | 32.14 |
| 11. | Pelvic fin length | 20.98 |
| 12. | Pre anal length | 53. 29 |
| 13. | Anal fin length | 17.99 |
| 14. | Snout length | 06.37 |
| 15. | Pre orbital length | 08.31 |
| 16. | Post orbital length | 18.91 |
| 17. | Head depth | 25.64 |
| 18. | Eye diameter | 10.58 |
| 19. | Caudal peduncle length | 19.54 |
| 20. | Caudal peduncle depth | 14.57 |
| 21. | Inter orbital space | 06.98 |
| **Meristic counts** | | |
| 22. | First dorsal fin (D1) | VII |
| 23. | Second dorsal fin (D2) | I+9 |
| 24. | Pectoral fin rays | 13 |
| 25. | Caudal fin rays | 18 |
| 26. | Pelvic fin | I+5 |
| 27. | Anal fin | II+8 |
| 28. | lateral line scales | 23 |
| 29. | Gill raker | 19 (14+5) |
| 30. | Pre dorsal scales | 05 |

## Systematics

Order KURTIFORMES
Family APOGONIDAE Günther, 1859
Subfamily APOGONINAE Günther, 1859
Genus ***Ostorhinchus*** Lacepède, 1802
***Ostorhinchus fleurieu*** Lacepède, 1802 (Figure 1).

**Figure 1.** *Ostorhinchus fleurieu* Lacepède, 1802, collected from Petuaghat fish landing centre, West Bengal.

*Synonym*

1802. *Ostorhinchus fleurieu* Lacepède, Histoire naturelle des poissons (Lacepède), **4**: 23, 24 (type locality: Pacific).
1987. *Apogon* (*Ostorhinchus) fleurieu*: Gon, Japanese Journal of Ichthyology, **34**(2): 138 (Neotype: New Guinea).

2012. *Apogon fleurieu*: Biswas *et al., Actaichthyologica et Piscatoria,* **42**(3): 255 (Kalpakkam, Tamil Nadu, India).

*Material examined:* Single specimen; Total Length (TL) 106.32 mm; Standard Length (SL) 80.70 mm; Head Length (HL) 31.58 mm; coll. S. Balakrishnan & P.C. Tudu.

*Meristic characters:* D VII, I+9; A II+8; P 13; GR 19; LL 23.

*Description:* Body depth 2.6 in SL and head length 2.5 in SL, respectively. The body is elongated, oblong, and slightly compressed and the preopercular ridge is smooth, and the posterior, and anterior margins are serrated. A large black spot is present in the middle of the caudal peduncle. Each lateral line scale with a small black spot; the anal fin and the second dorsal fin base with a line of dark brown dashes in the fresh specimen. The blackish band from snout tip to eye present. A narrow brown streak is present on the maxilla. Mouth with villi forms teeth. The lateral line is complete. The dark black band is present on the cheek. A black spot is present on both sides of the caudal peduncle which slightly touches the dorsal margin (Figure 1). Scales ctenoids. Caudal fin forked.

*Habitat:* Common in shallow coastal reefs with moderate currents at a depth range of 1- 30 m. (Fricke and Gon, 2010)

*Distribution: Elsewhere*: Indo-Pacific, Red Sea, East Africa and Madagascar east to the Philippines and New Guinea, North to Hong Kong and Taiwan, South to the Solomon Islands, Thailand (Fricke and Gon, 2010), Sri Lanka (Randall *et al.,* 1990), In India; Andhra Pradesh (Krishnan *et al.,* 2015), Kerala (Randall *et al.,* 1990) and Tamil Nadu (Biswas *et al*., 2012), and Andaman and Nicobar Islands (Fricke and Gon, 2010).

*Remarks:* Inhabits coral reefs or rocky reefs. Very similar to *Ostrohinchus aureus* (Lacepede, 1802), sometimes treated as a junior synonym of *Ostorhinchus fleurieu* Lacepède, 1802, has a distinct black bar (broadened dorsally and ventrally, forming a ring around shaped, in adult) forming a ring around the base of the caudal fin.

## Discussion

The members of the family Apogonidae are distinguished by their largemouth and eye along with two separated dorsal fins. This family is similar in morphology to the family Ambassidae but later has one dorsal fin with three anal spines (Mukherjee *et al.,* 2018). From the *Ostorhinchus* genus, 14 species were reported from Indian (Mohapatra *et al.,* 2020). Out of these three species, *i.e.*, *O. aureus, O. endekataenia* and *O. fasciatus,* have the same dorsal fin (VII, I+9) and anal fin (II, 8) as *O. fleurieu* but have different lateral line scales, whereas 23 lateral line scales in the present specimen. The *O. apogonides* have a dark horizontal stripe from the eye to the rear margin of the opercle with a few dark spots on the body under the lateral line scale. *O. cyanosoma* has an orange horizontal stripe arranged as a dark stripe. *O. endekataenia* has an incomplete row or stripe of spots between the caudal fin with a large black spot. *O. fasciatus* have base of dorsal fin to upper caudal peduncle with stripe. *O. fleurieu* is often confused with *O. aureus*. The previous was distinguished by having 19-gill raker and 23 lateral line scales, respectively, whereas the later had 21-gill raker and 25 lateral line scales (Smith and Heemstra, 1986). In the present species, dorsal and ventral ends of the dark caudal peduncle bar are wider than the middle one and are a mouthbrooder; and distinct pairing is seen during spawning and courtship. The present paper reports the flower cardinalfish *O. fleurieu* and adds up the list of Ichthyofaunal diversity of the Northern part of east coast India.

## Acknowledgements

The authors would like to express their gratitude to Dr. Dhriti Banerjee, Director of the Zoological Survey of India, for providing the necessary working conditions. We are grateful to Shri. S.S. Mishra, Scientist - D, and Dr. Anil Mohapatra, Scientist - E and Officer-in-Charge, ZSI, EBRC, Gopalpur-on-Sea, Odisha for their assistance in identifying the species. Dr. Dipanjan Ray, Assistant Professor and Head of Zoology at Bajkul Milani Vidyalaya in East Medinipur, West Bengal, is thanked for specimen validation.

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